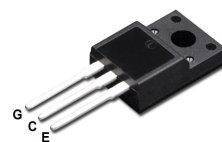
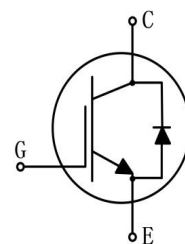


MAIN CHARACTERISTICS

I_C @TC=100°C	30A
V_{CE}	650V
$V_{CE(sat)}$ -typ	1.7V



TO-220F

FEATURES

- High ruggedness performance
- 10μs short circuit capability
- Positive $V_{CE(sat)}$ temperature coefficient
- High efficiency for motor control
- Excellent current sharing in parallel operation
- RoHS compliant.

APPLICATIONS

- Home appliances
- Motor drives
- General inverter

MECHANICAL DATA

- Case: Molded plastic
- Mounting Position: Any
- Molded Plastic: UL Flammability Classification Rating 94V-0
- Lead free in compliance with EU RoHS 2011/65/EU directive
- Solder bath temperature 275°C maximum, 10s per JESD 22-B106

Product specification classification

Part Number	Package	Mode Name	Pack
LGT30N65F	TO-220F	LGT30N65F	Tube

Maximum Ratings

Characteristics	Symbol	Value	Unit
		220F	
Collector-emitter voltage	V_{CES}	650	V
Gate-emitter voltage	V_{GES}	± 20	V
Continuous collector current (TC=25°C)	I_C	60	A
Continuous collector current (TC=100°C)		30	A
Pulsed collector current, tp limited by Tvjmax	I_{CM}	120	A
Diode continuous forward current (TC=100°C)	I_F	30	A
Diode maximum current, tp limited by Tvjmax	I_{FM}	80	A
Power dissipation (TC=25°C)	P_{tot}	50	W
Power dissipation (TC=100°C)		25	W
Operating junction temperature range	T_{vj}	-40 to +175	°C
Storage temperature range	T_{stg}	-55 to +150	°C

Thermal characteristics

Characteristics	Symbol	Values		Unit
		Typ	Max.	
Thermal resistance, junction to case for IGBT	$R_{th(j-c)}$	-	3	K/ W
Thermal resistance, junction to case for Diode	$R_{th(j-c)}$	-	4.50	K/ W
Thermal resistance, junction to ambient	$R_{th(j-a)}$	-	50	K/ W

Note1:Pulse test: 300 μ s pulse width, 2 % duty cycle

Electrical characteristics of IGBT at $T_{vj}=25^\circ\text{C}$ unless otherwise specified

Static characteristics

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Collector-emitter breakdown voltage	$V_{GE}=0V, I_C=250\mu A$	BV_{CES}	650	-	-	V
Collector-emitter leakage current	$V_{CE}=650V, V_{GE}=0V$	I_{CES}	-	-	50	μA
Gate leakage current, forward	$V_{GE}=\pm 20V, V_{CE}=0V$	I_{GES}	-	-	± 100	nA
Gate-emitter threshold voltage	$V_{GE}=V_{CE}, I_C=1mA$	$V_{GE(th)}$	5.3	5.7	5.9	V
Collector-emitter saturation voltage	$V_{GE}=15V, I_C=30A$	$V_{CE(sat)}$	-	1.7	-	V
	$V_{GE}=15V, I_C=30A, T_{vj}=175^\circ\text{C}$		-	2.2	-	V

Dynamic characteristics

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Input capacitance	$V_{CE}=25V$ $V_{GE}=0V$ $f=1MHz$	C_{ies}	-	1978	-	pF
Output capacitance		C_{oes}	-	100	-	pF
Reverse transfer capacitance		C_{res}	-	23	-	pF
Total gate charge	$V_{CC}=520V, V_{GE}=15V, I_C=30A$	Q_g	-	103	-	nC

Electrical characteristics of IGBT at $T_{vj}=25^{\circ}\text{C}$ unless otherwise specified

Switching characteristics

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Turn-on delay time	$V_{CC}=400\text{V}$ $V_{GE}=15\text{V}$ $I_C=30\text{A}$ $R_G=10\Omega$ Inductive load	td(on)	-	30	-	ns
Rise time		tr	-	39	-	ns
Turn-off delay time		td(off)	-	151	-	ns
Fall time		tf	-	29	-	ns
Turn-on energy		Eon	-	0.95	-	mJ
Turn-off energy		Eoff	-	0.6	-	mJ
Total switching energy		Ets	-	1.55	-	mJ
Turn-on delay time	$V_{CC}=400\text{V}$ $V_{GE}=15\text{V}$ $I_C=30\text{A}$ $R_G=10\Omega$ Inductive load $T_{vj}=175^{\circ}\text{C}$	td(on)	-	28	-	ns
Rise time		tr	-	40	-	ns
Turn-off delay time		td(off)	-	169	-	ns
Fall time		tf	-	71	-	ns
Turn-on energy		Eon	-	1.5	-	mJ
Turn-off energy		Eoff	-	0.8	-	mJ
Total switching energy		Ets	-	2.3	-	mJ

Electrical characteristics of Diode at $T_{vj}=25^{\circ}\text{C}$ unless otherwise specified

Characteristics	Test Condition	Symbol	Min	Typ	Max	Unit
Diode forward voltage	$I_F=30\text{A}$	VF	-	1.4	-	V
	$I_F=30\text{A}, T_{vj}=175^{\circ}\text{C}$		-	1.2	-	V
Diode reverse recovery time	$V_R=400\text{V}$	trr	-	105	-	ns
Diode peak reverse recovery current	$I_F=30\text{A}$	Irrm	-	16	-	A
Diode reverse recovery charge	$diF/dt=-550\text{A}/\mu\text{s}$	Qrr	-	876	-	nC
Diode reverse recovery time	$V_R=400\text{V}$	trr	-	171	-	ns
Diode peak reverse recovery current	$I_F=30\text{A}$	Irrm	-	26	-	A
Diode reverse recovery charge	$diF/dt=-550\text{A}/\mu\text{s} \quad T_{vj}=175^{\circ}\text{C}$	Qrr	-	2650	-	nC

RATINGS AND CHARACTERISTIC CURVES

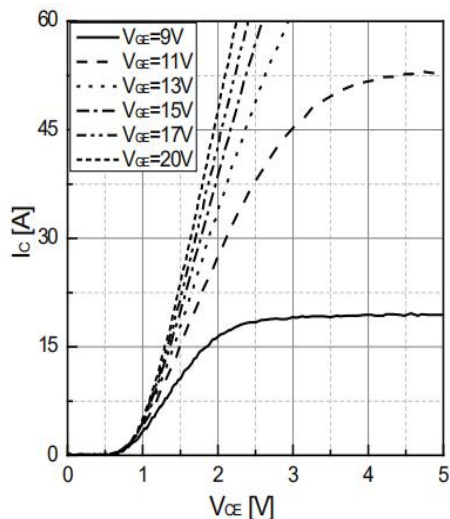


Fig 1. Typical output characteristic ($T_{vj}=25^{\circ}\text{C}$)

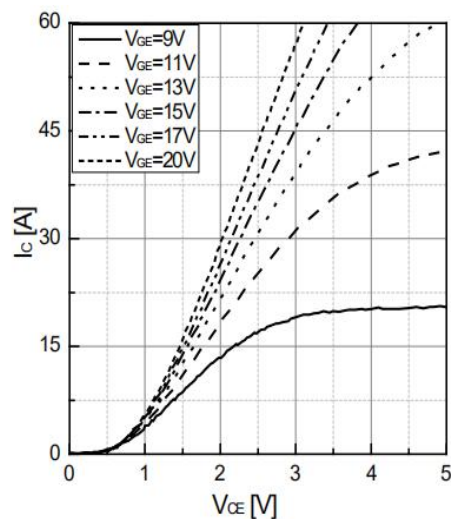


Fig 2. Typical output characteristic ($T_{vj}=175^{\circ}\text{C}$)

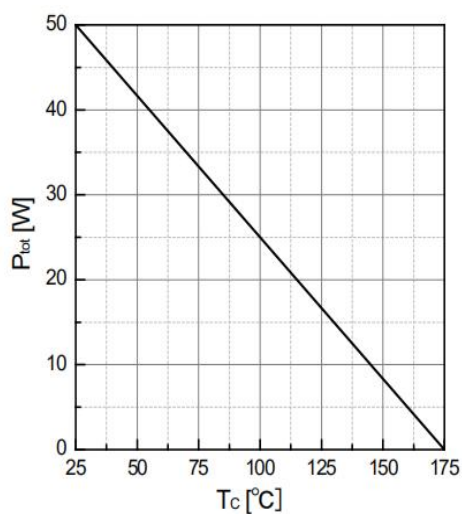


Fig 3. Power dissipation as a function of T_c

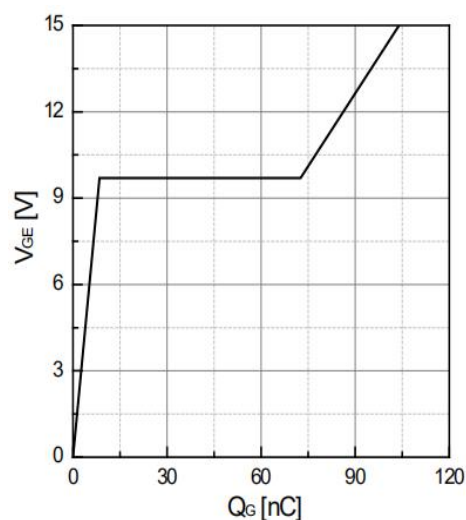


Fig 4. Typical Gate charge

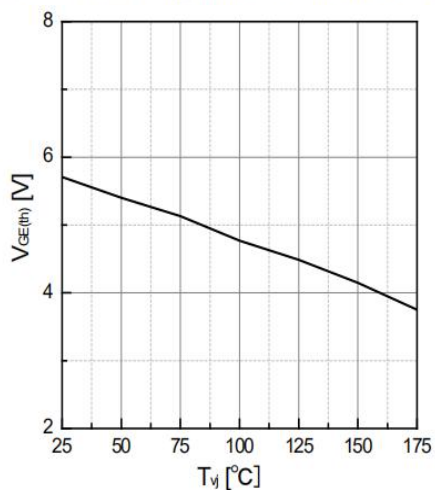


Fig 5. Typical $V_{GE(th)}$ as a function of T_{vj}
($I_C=1\text{mA}$)

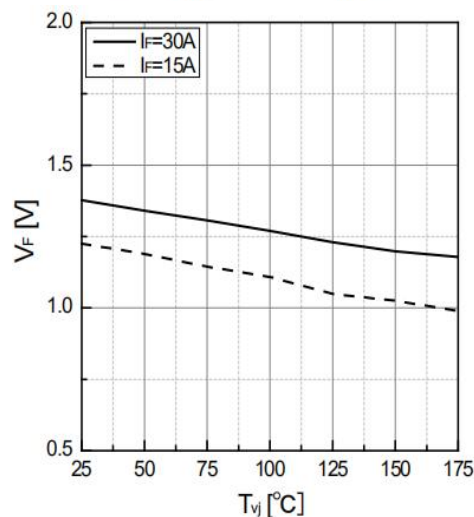


Fig 6. Typical V_F as a function of T_{vj}

RATINGS AND CHARACTERISTIC CURVES

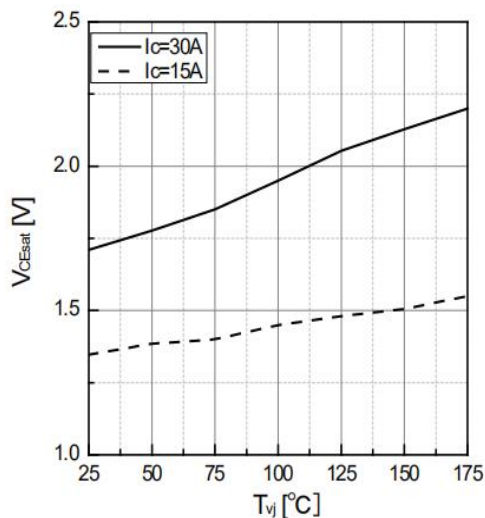


Fig 7. Typical V_{CEsat} as a function of T_{vj}

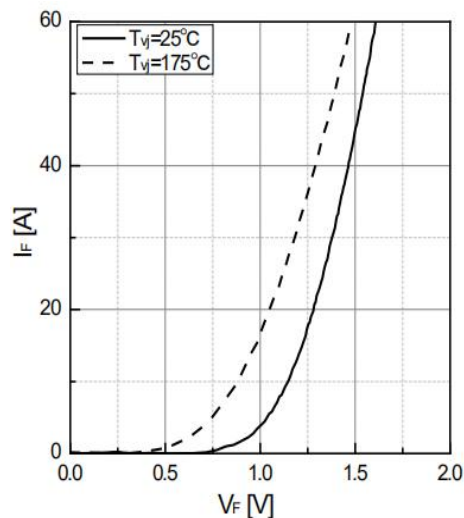


Fig 8. Typical I_F as a function of V_F

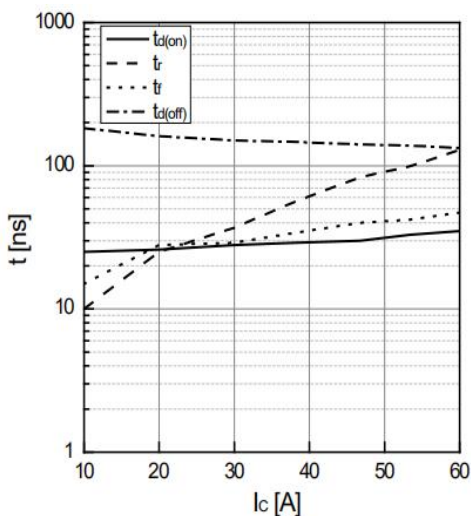


Fig 9. Typical switching time as a function of I_C

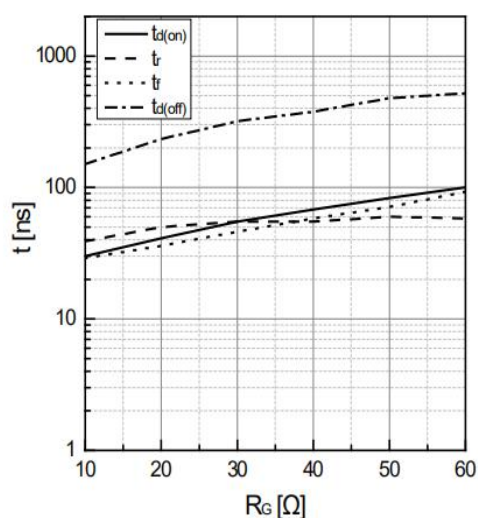


Fig 10. Typical switching times as a function of R_G

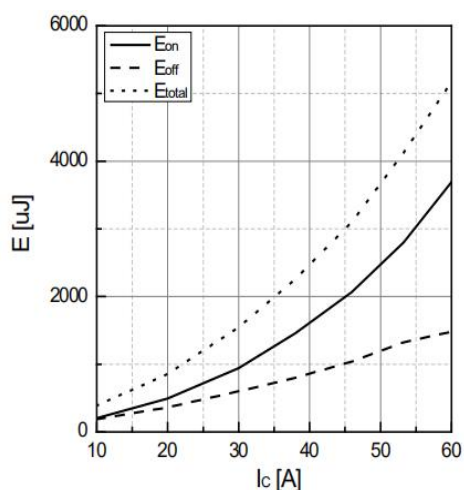


Fig 11. Typical switching energy losses as a function of I_C

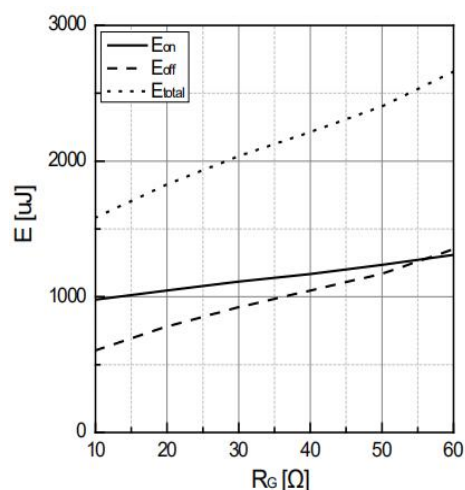


Fig 12. Typical switching energy losses as a function of R_G

RATINGS AND CHARACTERISTIC CURVES

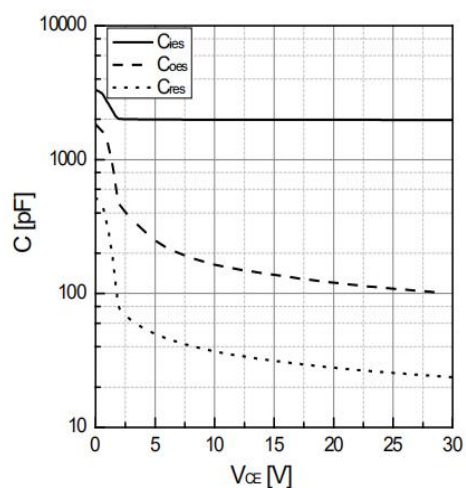
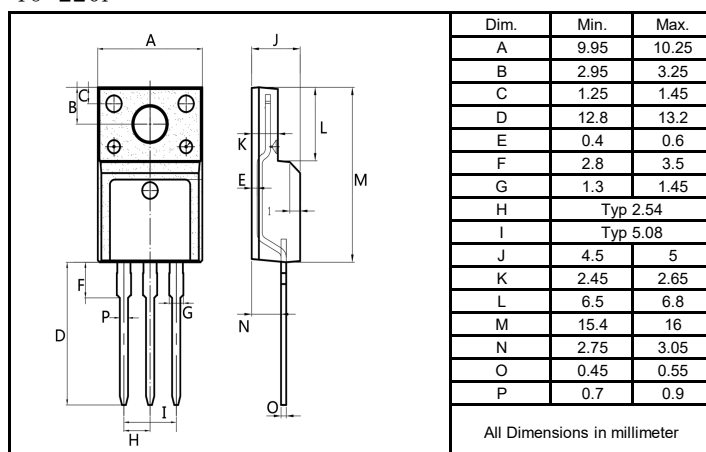


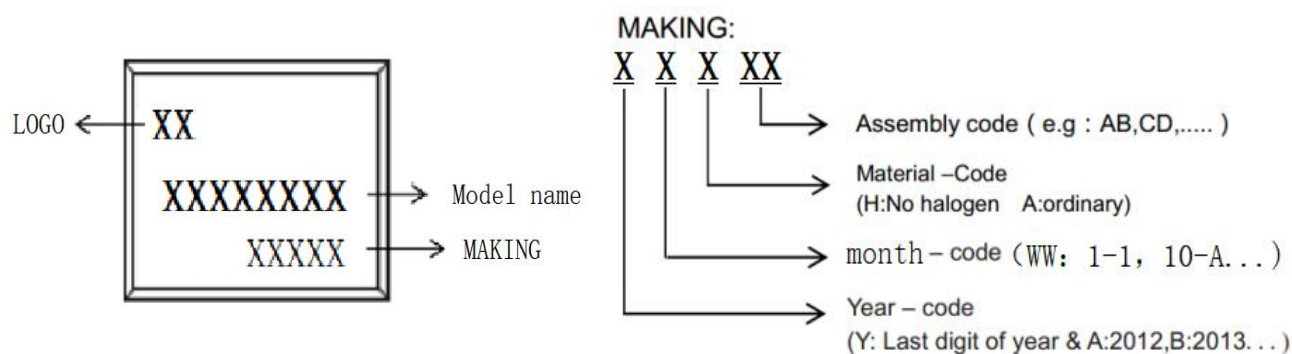
Fig 13. Typical capacitance as a function of V_{CE}
($f=1\text{Mhz}$, $V_{GE}=0\text{V}$)

Package Outline Dimensions millimeters

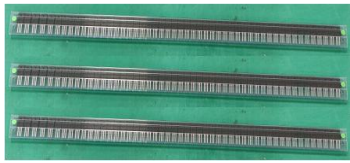
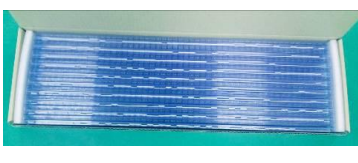
TO-220F



Marking on the body



packing instruction

PKG	最小包装	内盒	外箱
TO-220F			
	50PCS/管	1000pcs/盒	5000pcs/箱

Notice

All product, product specifications and data are subject to change without notice to improve. The right to explain is owned by LINGXUN company.

Confirm that operation temperature is within the specified range described in the product specification. Avoid applying power exceeding power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.

LINGXUN electronics shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in the